VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9 VAC 25-260. The discharge results from the treatment of poultry processing wastewater and storm water generated in the area surrounding the facility (SIC Code: 2015 – Poultry Processing). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
   New Market Poultry, LLC
   PO Box 220
   New Market, VA 22844
   Location: 145 East Old Cross Road, New Market, Virginia 22844

2. Permit No. VA0054453; Expiration Date: June 30, 2014

3. Owner: New Market Poultry, LLC
   Contact Name: Jack Wigley
   Title: Operations Manager
   Telephone No: (540) 740-4260
   Email: Jack.wigley@tiptoppoultry.com

4. Application Complete Date: December 27, 2013

   Permit Writer: Bev Carver Date: April 16, 2014
   Reviewed By: Dawn Jeffries Date: April 18, 2014

   Public Comment Period: May 14, 2014 – June 13, 2014

5. Receiving Stream Name: Smith Creek
   River Mile: 12.39
   Use Impairment: Yes
   Special Standards: pH
   Tidal Waters: No
   Watershed Name: VAV – B47R Smith Creek
   Basin: Potomac; Subbasin: Shenandoah
   Section: 6; Class: IV

6. Operator License Requirements per 9 VAC 25-31-200.C: III

7. Reliability Class per 9 VAC 25-790: N/A

8. Permit Characterization:
   ☑ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
   ☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

9. Description of Wastewaters and Treatment Facilities: **Appendix A**

   Total Number of Outfalls = 1
   Operation and Maintenance (O&M) Manual Approval: Approved January 10, 2006

10. Discharge Location Description and Receiving Waters Information: **Appendix B**

11. Antidegradation (AD) Review & Comments per 9 VAC 25-260-30:
Tier Designation: Smith Creek - Tier 1

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. Smith Creek in the immediate vicinity of the discharge was determined to be a Tier 1 water because it is listed as impaired for aquatic life use (benthics). Antidegradation baselines are not calculated for Tier 1 waters.

12. Site Inspection: Performed by Bev Carver on December 4, 2013

13. NPDES Permit Rating Worksheet: **Appendix A**
The worksheet updated using current information regarding the facility.
☐ Major ☑ Minor Score = 40

14. Effluent Screening and Effluent Limitations: **Appendix C**

15. Effluent Toxicity Testing Requirements included per 9 VAC 25-31-220.D: ☑ Yes ☐ No **Appendix C**

16. Management of Sludge/Solids:

Industrial Solids: DAF sludge and offal are hauled to Valley Proteins for processing (VPA01548). Waste Activated Sludge from the clarifier is pumped and hauled to the North River WWTF for further treatment and disposal (VA0060640). Sludge can also be dried on sand drying beds or with a belt press and landfilled at the Maplewood Landfill in Amelia, Virginia.

17. Permit Changes and Bases for Special Conditions: **Appendix D**

18. Material Storage per 9 VAC 25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.

19. Antibacksliding Review per 9 VAC 25-31-220.L: This permit complies with the antibacksliding provisions of the VPDES Permit Regulation.

20. Impaired Use Status Evaluation per 9 VAC 25-31-220.D: Smith Creek in the immediate vicinity of the discharge is listed as impaired for aquatic life use (benthics) and bacteria. The facility was included in the Smith Creek Watershed TMDL which was approved June 29, 2004. The TMDL specifies the following waste load allocations (WLAs) for this facility:

Sediment: 134,382.8 lb/yr (based on a design flow of 0.30 MGD and a TSS concentration of 147 mg/L)
E. coli: 5.22×10^{11} cfu/year (based on a design flow of 0.30 MGD and a concentration of 126 cfu/100 mL)

The concentration limits were adjusted accordingly to maintain the WLAs for TSS and E. coli at the 0.45 and 0.50 MGD flow tiers.

21. Regulation of Users per 9 VAC 25-31-280.B.9: N/A – There are no industrial users associated with this facility other than the owner.

22. Storm Water Management per 9 VAC 25-31-120: Application Required? ☑Yes ☐No
Applicable storm water management requirements have been included in this permit.

23. Compliance Schedule per 9 VAC 25-31-250: None required by this permit.

24. Variances/Alternative Limits or Conditions per 9 VAC 25-31-280.B, 100.H, and 100.M: The permittee has requested waivers from sampling and reporting COD and TOC on the Form 2C application. The waiver request has been approved.

25. Financial Assurance Applicability per 9 VAC 25: N/A – This facility does not serve private residences.

26. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☑ No

27. Nutrient Trading Regulation per 9 VAC 25-820: See Appendix B
General Permit Required: ☑ Yes ☐ No

28. Threatened and Endangered (T&E) Species Screening per 9 VAC 25-260-20 B.8: Because this is not an issuance or reissuance that allows increased flows, T&E screening is not automatically required. In accordance with the VPDES Memorandum of Understanding, T&E screening was requested for this facility. T&E screening was completed on September 3, 2013. Comments were received from DCR on September 30, 2013. Comments were received from DGIF on December 18, 2013. Comments were considered in the drafting of the permit and were also forwarded to the permittee.

29. Public Notice Information per 9 VAC 25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Bev Carver at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7805, Beverley.carver@deq.virginia.gov.

    Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

30. Historical Record:

- Original VPDES Permit was issued to Holly Farms Poultry on December 4, 1978.
- The permit was originally issued based on a design flow of 0.30 MGD.
- Change of Ownership modification to New Market Poultry was effective on November 23, 1988.
- Change of Ownership modification to New Market Poultry 2007, LLC was effective on December 28, 2006.
- Change of Ownership modification to New Market Poultry, LLC was effective on March 25, 2011.
- A Consent Special Order was approved on September 27, 2012.
- A CTO was approved on May 14, 2012 for an Effluent Pipeline Plan and Profile.
- On February 11, 2014, DEQ concurred with the plan for improvements to the two anaerobic ponds that was submitted by Geosyntec Consultants.

APPENDIX A

DESCRIPTION OF WASTEWATERS AND TREATMENT FACILITIES

Outfall 001

Operations Contributing Wastewater:
- Poultry Processing
- Plant Sanitation and Clean Up
- Truck Washing
- Coop Washing
- Storm Water from Site
- Shipping Dock wash
- Refrigerated Truck Drainage

New Market Poultry has 1 production shift which normally runs Monday – Friday with some Saturdays. The discharge from the WWTF occurs 7 days per week.

All sanitary wastewater (with the exception of 1 bathroom located in the WWTF building) is directed to the Town of New Market collection system and then pumped to the Town of Broadway Regional WWTF which is authorized to discharge through VPDES Permit No. VA0090263.

Treatment Works Description (Unit by unit):
- Influent Screening Basin
- Dissolved Air Flotation Tank
- Old Anaerobic Lagoon (not currently used, may be cleaned out and used in the future)
- New Anaerobic Lagoon (went online 06/2007)
- Barrier Oxidation Ditch
- Rapid Mix Splitter Box
- Traveling Bridge Clarifier
- Chlorine Contact Tank
- Post Aeration
- Dechlorination
- Flow Measurement

Sludge treatment:
- Waste activated sludge hauled to North River WWTF
- Sludge drying beds (not used)
- Belt Press (used as needed)

Flow:
Design Average Flow = 0.30 MGD
Monthly average flow (January 2012– May 2013) = 0.238 MGD

Expansion Flow Tier = 0.45 MGD
Expansion Flow Tier = 0.50 MGD

Smith Creek, UT and Outfall 002

Smith Creek, UT runs along West Old Cross Road and enters Smith Creek immediately downstream of New Market Poultry Outfall 001. Smith Creek, UT receives flow from:

- Storm Water Outfall pipe for the Town of New Market (aka Outfall 002)
- Spring Water overflow pipe from adjoining property
- During heavy rain events sheet flow from New Market Poultry site

Outfall 002 will be deleted from the 2014 permit. This outfall is a storm water outfall for the Town of New Market, not New Market Poultry. This pipe became associated with New Market Poultry because it runs underneath the New Market Poultry processing plant and was becoming contaminated with process wastewater. In 2012, New Market Poultry installed heavy duty concrete decking and covered it with a thick rubber membrane to prevent process wastewater from infiltrating into the New Market storm drain pipe. It will continue to be a violation of the permit to discharge process wastewater from any location other than Outfall 001.

Storm water runoff from the New Market Poultry site is directed to the New Market Poultry WWTP and discharged through Outfall 001. During a heavy rainfall event, storm water runoff from New Market Poultry enters Smith Creek, UT by sheet flow, not Outfall 002.

Town of New Market storm drain to Smith Creek, UT (aka Outfall 002)

Spring pipe discharge to Smith Creek, UT

Confluence of Smith Creek, UT and Smith Creek immediately downstream of Outfall 001.

VPDES Permit Rating Work Sheet

Facilities identified under SIC Code 2015 have the following characteristics as defined in Appendix A to the NPDES Permit Rating Work Sheet found in the VPDES Permit Manual.

1987 SIC Code	1987 SIC Code Title	40 CFR 439 Sub-Part	Sub-part Title	Human Health Toxicity Number	Total Toxicity Number	Industrial Sub-category Number
2015	POULTRY SLAUGHTERING AND PROCESSING	NA	NA	7	7	NA

Factor 1 – Toxic Pollutant Potential – This rating is prescribed by the worksheet instructions regarding poultry slaughtering and processing facilities. This is unchanged from the previous rating.

Factor 2 – Flow/Stream Flow Volume
Section B, Type II is selected because the discharge contains process wastewater. This is unchanged from the previous rating.

Factor 3. – Conventional Pollutants
Factor 3.A. – Oxygen Demanding Pollutant - The permit contains limits for BOD_5. This is unchanged from the previous rating.

Factor 3.B. – TSS - The permit contains limits for TSS. This is unchanged from the previous rating.

Factor 3.C. – Nitrogen - The permit contains limits for Total Nitrogen, but no limits for Ammonia-N. This is unchanged from the previous rating.

Factor 4. – Public Health Impact
Using a worst case evaluation, it is assumed that there is a public drinking water supply within 50 miles downstream of the facility. A human health toxicity number of 1 corresponds to code 1, resulting in 0 points for this factor. This is unchanged from the previous rating.

Factor 5.A. – The facility is subject to water quality based effluent limits. This is unchanged from the previous rating.

Factor 5.B. – The receiving water is in compliance with applicable WQS for pollutants that are water quality limited in the permit. This is unchanged from the previous rating.

Factor 5.C. – The permit contains Toxics Management Program requirements. This is unchanged from the previous rating.

Factor 6. – Proximity to Near Coastal Waters: Headquarters Priority Permit Indicator (HPRI) Code #4 – This discharge occurs in a non-coastal county. This is unchanged from the previous rating.

NPDES PERMIT RATING WORK SHEET

☐ Regular Addition
☐ DiscretionaryAddition
☐ Score change, but no status change
☐ Deletion

NPDES NO. **VA0054453**

Facility Name: **New Market Poultry, LLC**

City: **New Market, VA**

Receiving Water: **Smith Creek**

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?
1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☑ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)
☑ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: 2015 Other SIC Codes: ____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams			[ ] 3.	3	15	[ ] 7.	7	35
[X] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked : 1

Total Points Factor 1: 5

FACTOR 2: Flow/Stream Flow Volume (*Complete either Section A or Section B; check only one)*

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)		Code	Points
Type I: Flow < 5 MGD	☐	11	0
Flow 5 to 10 MGD	☐	12	10
Flow > 10 to 50 MGD	☐	13	20
Flow > 50 MGD	☐	14	30
Type II: Flow < 1 MGD	☐	21	10
Flow 1 to 5 MGD	☐	22	20
Flow > 5 to 10 MGD	☐	23	30
Flow > 10 MGD	☐	24	50
Type III: Flow < 1 MGD	☐	31	0
Flow 1 to 5 MGD	☐	32	10
Flow > 5 to 10 MGD	☐	33	20
Flow > 10 MGD	☐	34	30

Section B X Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50 %	☐	43	20
Type II:	< 10 %	X☐	51	0
	10 % to <50 %	☐	52	20
	> 50 %	☐	53	30

Code Checked from Section A or B: 51

Total Points Factor 2: 0

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ☐ BOD ☐ COD ☐ Other:_____

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	X☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

B. Total Suspended Solids (TSS)

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	X☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 5000 lbs/day	3	15
	☐	> 5000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

C. Nitrogen Pollutant: (check one) ☐ Ammonia ☐ Other: _____

		Nitrogen Equivalent	*Code*	*Points*
Permit Limits: (check one)	X☐	< 300 lbs/day	1	0
	☐	300 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: 1

Points Scored: 0

Total Points Factor 3: 10

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

X YES (If yes, check toxicity potential number below)

☐ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column ☐ check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
X 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: 1

Total Points Factor 4: 0

FACTOR 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:

		Code	Points
X	Yes	1	10
☐	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
	Yes	1	0
X☐	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
X	Yes	1	10
☐	No	2	0

Code Number Checked: A 1 B 2 C 1

Points Factor 5: A 10 + B 5 + C 10 = 25 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): _51__ *Enter the multiplication factor that corresponds to the flow code:* _0.10__

Check appropriate facility HPRI Code (from PCS):

	HPRI#	*Code*	*HPRI Score*
☐	1	1	20
☐	2	2	0
☐	3	3	30
X	4	4	0
☐	5	5	20

HPRI code checked: 4

Flow Code	*Multiplication Factor*
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) 0 X (Multiplication Factor) 0.1 = 0 (TOTAL POINTS)

B. Additional Points ☐ NEP Program
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

N/A

	Code	Points
☐ Yes	1	10
☐ No	2	0

C. Additional Points ☐ Great Lakes Area of Concern
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

N/A

	Code	Points
☐ Yes	1	10
☐ No	2	0

Code Number Checked: A 4 B 2 C 2 -

Points Factor 6: A 0 + B 0 + C 0 = 0 TOTAL

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	5
2	Flows/Streamflow Volume	0
3	Conventional Pollutants	10
4	Public Health Impacts	0
5	Water Quality Factors	25
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	40

S1. Is the total score equal to or greater than 80? ☐ Yes (Facility is a major) X No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

X No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 40

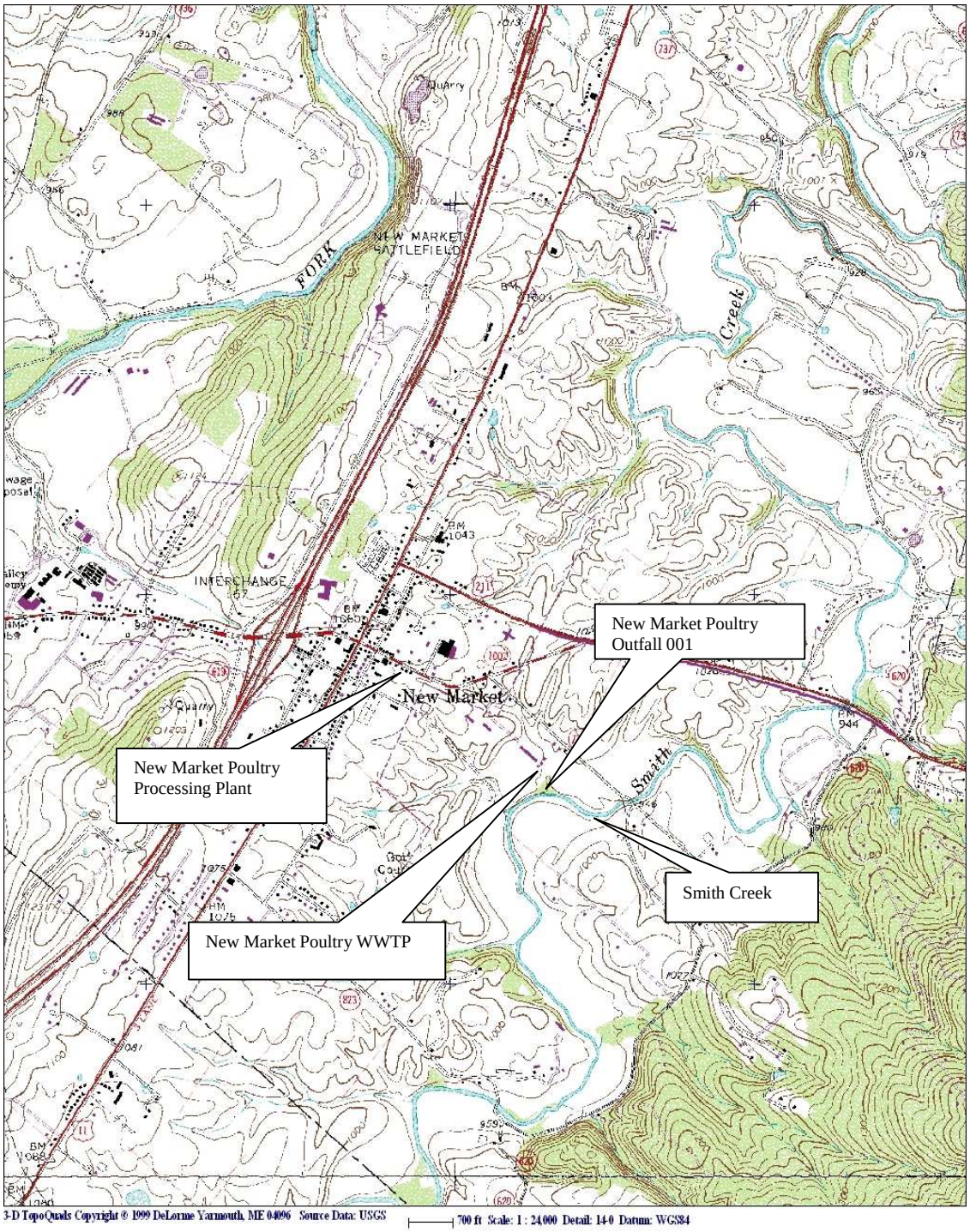
OLD SCORE: 40

Bev Carver
Permit Writer's Name
540-574-7805
Phone Number
January 1, 2014
Date

APPENDIX B

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

New Market Poultry discharges to Smith Creek in Shenandoah County. Outfall 001 is shown on the topographic map below.



PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessments Review table and corresponding map below.

WATER QUALITY ASSESSMENTS REVIEW
POTOMAC-SHENANDOAH RIVER BASIN
1/3/2014

IMPAIRED SEGMENTS

SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
B45R-04-BAC	North Fork Shenandoah River	90.61	56.35	34.26	Fecal Coliform/E-coli	
B45R-05-BEN	North Fork Shenandoah River	89.74	76.14	13.60	Benthic	
B47R-02-BAC	Mountain Run/Smith Creek/War Branch	5.98, 35.00, 6.81	0.00, 0.00, 6.81	5.98, 35.00, 6.81	E-coli	
B47R-05-BEN	Smith Creek	25.19	0.00	25.19	Benthic	

PERMITS

PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0054453	**New Market Poultry Products**	**Smith Creek**	**12.39**	**383829**	**0783940**	**VAV-B47R**
VA0089877	New Market Filtration Plant	N.F. Shen River X-Trib	0.95	383857	0784049	VAV-B45R
VA0021342	Virginia Museum of the Civil War STP	N.F. Shenandoah River	79.56	383949	0784028	VAV-B45R
VA0071846	Endless Caverns Inc	Smith Creek	17.24	383606	0784049	VAV-B47R
VA0080535	Two Hills Inc. STP	Smith Creek	5.53	384055	0783829	VAV-B47R

MONITORING STATIONS

STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
N.F. Shenandoah River	1BNFS076.56	76.56	7/18/1968	384126	0783950	
N.F. Shenandoah River	1BNFS081.42	81.42	3/3/1970	383906	0784154	
Smith Creek	1BSMT004.60	4.6	4/23/1979	384138	0783836	
Smith Creek	1BSMT010.90	10.9	3/3/1970	383843	0783842	
Smith Creek	1BSMT018.40	18.4	3/3/1970	383518	0784207	
Smith Creek	1BSMT019.26	19.26	1/22/2009	383518	0784207	
N.F. Shenandoah River	1BNFS081.61	81.61	1984	383906	0784154	
Plains Mill Spring	1BXDX000.48	0.48	5/1/1996	383834	0784312	
Smith Creek	1BSMT005.71	5.71	5/2/1991	384049	0783822	
Smith Creek	1BSMT006.62	6.62	5/18/1999	384032	0783825	
Smith Creek	1BSMT009.08	9.08	6/13/2007	383939	0783918	

PUBLIC WATER SUPPLY INTAKES

OWNER	STREAM	RIVER MILE				
NEW MARKET, TOWN OF	Smith Creek	13.46				

WATER QUALITY MANAGEMENT PLANNING REGULATION

Is this discharge addressed in the WQMP regulation? **No**

If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?

PARAMETER	ALLOCATION					

WATERSHED NAME

VAV-B47R Smith Creek

FLOW FREQUENCY DETERMINATION

Stream flow frequencies are required at the discharge points for Two Hills, Inc. STP and New Market Poultry LLC for use by the permit writer in developing effluent limitations for the two VPDES permit reissuances.

The VDEQ has operated a continuous record gage on Smith Creek (#01632900), below New Market, since 1960. The gage is located downstream of the New Market Poultry LLC and Two Hills STP discharge points. Since the gage is located downstream of the discharge points, the average monthly effluent flows from the Two Hills STP (0.00279 cfs) and New Market Poultry, LLC (0.403 cfs) were subtracted from the gage values. The flow frequencies were determined by using the values at the reference gage, minus the Two Hills, Inc STP and New Market Poultry, LLC effluent flows, and adjusting them by proportional drainage areas. The data for the reference gage and the discharge points are presented below.

Smith Creek near New Market, VA (#01632900):

Drainage Area = 93.6 mi^2

1Q30 =	4.7 cfs	High Flow 1Q10 =	13 cfs
1Q10 =	6.6 cfs	High Flow 7Q10 =	15 cfs
7Q10 =	7.3 cfs	High Flow 30Q10 =	18 cfs
30Q10 =	8.6 cfs	HM =	31 cfs
30Q5 =	11 cfs		

Smith Creek at New Market Poultry, LLC discharge point:

Drainage Area = 80.64 mi^2

1Q30 =	3.70 cfs	2.39 MGD
1Q10 =	5.34 cfs	3.45 MGD
7Q10 =	5.94 cfs	3.84 MGD
30Q10 =	7.06 cfs	4.56 MGD
30Q5 =	9.13 cfs	5.90 MGD
High Flow 1Q10 =	10.8 cfs	7.01 MGD
High Flow 7Q10 =	12.6 cfs	8.13 MGD
High Flow 30Q10 =	15.2 cfs	9.80 MGD
HM =	26.4 cfs	17.0 MGD

Smith Creek at Two Hills STP discharge point:

Drainage Area = 93.2 mi^2

1Q30 =	4.28 cfs	2.76 MGD
1Q10 =	6.17 cfs	3.99 MGD
7Q10 =	6.86 cfs	4.44 MGD
30Q10 =	8.16 cfs	5.27 MGD
30Q5 =	10.5 cfs	6.82 MGD
High Flow 1Q10 =	12.5 cfs	8.10 MGD
High Flow 7Q10 =	14.5 cfs	9.39 MGD
High Flow 30Q10 =	17.5 cfs	11.3 MGD
HM =	30.5 cfs	19.7 MGD

This analysis assumes there are no other significant discharges, withdrawals or springs between the gage and the discharge points. The high flow months are January through May.

Peer Reviewer: Dawn Jeffries
Date: June 28, 2013

EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

Design Flow = 0.30 MGD	**Design Flow = 0.45 MGD**
Stream 7Q10 = 3.84 MGD Stream 30Q10 = 4.56 MGD Stream 1Q10 = 3.45 MGD Stream slope = 0.00100 ft/ft Stream width = 15 ft Bottom scale = 2 Channel scale = 1 Mixing Zone Predictions @ 7Q10 Depth = .8613 ft Length = 311.18 ft Velocity = .496 ft/sec Residence Time = .0073 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used. Mixing Zone Predictions @ 30Q10 Depth = .9526 ft Length = 284.04 ft Velocity = .5265 ft/sec Residence Time = .0062 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used. Mixing Zone Predictions @ 1Q10 Depth = .8098 ft Length = 328.95 ft Velocity = .4779 ft/sec Residence Time = .1912 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used. Virginia DEQ Mixing Zone Analysis Version 2.1	Stream 7Q10 = 3.84 MGD Stream 30Q10 = 4.56 MGD Stream 1Q10 = 3.45 MGD Stream slope = 0.00100 ft/ft Stream width = 15 ft Bottom scale = 2 Channel scale = 1 Mixing Zone Predictions @ 7Q10 Depth = .8808 ft Length = 304.91 ft Velocity = .5026 ft/sec Residence Time = .007 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used. Mixing Zone Predictions @ 30Q10 Depth = .9709 ft Length = 279.15 ft Velocity = .5325 ft/sec Residence Time = .0061 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used. Mixing Zone Predictions @ 1Q10 Depth = .8298 ft Length = 321.83 ft Velocity = .485 ft/sec Residence Time = .1843 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used. Virginia DEQ Mixing Zone Analysis Version 2.1

Design Flow = 0.50 MGD

Stream 7Q10 = 3.84 MGD
Stream 30Q10 = 4.56 MGD
Stream 1Q10 = 3.45 MGD
Stream slope = 0.00100 ft/ft
Stream width = 15 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .8873 ft
Length = 302.91 ft
Velocity = .5048 ft/sec
Residence Time = .0069 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .977 ft
Length = 277.57 ft
Velocity = .5345 ft/sec
Residence Time = .006 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .8365 ft
Length = 319.48 ft
Velocity = .4873 ft/sec
Residence Time = .1821 hours

Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Virginia DEQ Mixing Zone Analysis Version 2.1

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000 Harrisonburg, VA 22801

SUBJECT: Site Visit for Reissuance of VPDES Permit No. VA0054453, New Market Poultry Shenandoah County

TO: Permit Processing File

FROM: Bev Carver

DATE: December 4, 2013

On December 4, 2013, the writer performed a site visit at the subject facility. Matt Hopkins, Director of Environmental Health and Safety was also present.

Outfall 001 to Smith Creek. Under "normal" storm events, storm water flow from the site is directed to the WWTP serving Outfall 001.

New Anaerobic Lagoon showing liner bubble on surface. New Market Poultry is currently doing permeability tests. The Company is also considering cleaning out the Old Anaerobic Lagoon and using that lagoon while the New Anaerobic Lagoon is repaired.

APPENDIX C

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the table below.

Basis for Permit Limits **Outfall 001 - Design Flow: 0.30 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow	3	NL		NL		Continuous	TIRE
$CBOD_5$	6	58 mg/L	66 kg/d	120 mg/L	130 kg/d	1/Week	24 HC
TSS	5	73 mg/L	83 kg/d	147 mg/L	167 kg/d	1/Week	24 HC
Oil and Grease	1	27 kg/d		54 kg/d		1/Week	Grab
Effluent Chlorine (TRC)	2	0.10 mg/L		0.22 mg/L		3/Day at 4 Hour intervals	Grab
E. coli (geometric mean)	2,5	126 N/100 mL		NA		4/Month 10 am to 4 pm	Grab
---	---	Minimum		Maximum		---	---
pH	2	6.5 S.U.		9.5 S.U.		1/Day	Grab
Contact Chlorine (TRC)	1,2	1.0 mg/L		NA		3/Day at 4 Hour Intervals	Grab
Chronic Whole Effluent Toxicity, NOEC, *C. dubia* (TUc)	2,7	NA		20		1/3 Months	24 HC

NL = No Limitation, monitoring required
NA = Not Applicable
TIRE = Totalizing, Indicating and Recording Equipment
24 HC = 24-Hour composite sample
4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week
1/3 Months = Quarterly sampling with the results submitted with the DMR due January 10th, April 10th, July 10th and October 10th of each year

Bases for Effluent Limitations

1. Best Professional Judgment (BPJ)
2. Water Quality Standards (9 VAC 25-260)
3. VPDES Permit Regulation (9 VAC 25-31)
4. Regional Stream Model simulation
5. Smith Creek Bacteria and Sediment Watershed TMDL approved June 29, 2004
6. Antibacksliding
7. Whole Effluent Toxicity evaluation

Basis for Permit Limits **Outfall 001 - Design Flow: 0.45 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow	3	NL		NL		Continuous	TIRE
$CBOD_5$	2,4	38 mg/L	65 kg/d	76 mg/L	130 kg/d	1/Week	24 HC
TSS	5	49 mg/L	83 kg/d	98 mg/L	167 kg/d	1/Week	24 HC
Oil and Grease	1	27 kg/d		54 kg/d		1/Week	Grab
Effluent Chlorine (TRC)	2	0.067 mg/L		0.15 mg/L		3/Day at 4 Hour Intervals	Grab
E. coli (geometric mean)	2,5	83 N/100 mL		NA		4/Month 10 am to 4 pm	Grab
----------	------	Yearly Average		Maximum		----------	----------
TP – Year to Date	6	NL (mg/L)		NA		1/Month	Calculated
TP – Calendar Year	6,7	1.0 (mg/L)		NA		1/Year	Calculated
TN – Year to Date	6	NL (mg/L)		NA		1/Month	Calculated
TN – Calendar Year	6,7	8.0 (mg/L)		NA		1/Year	Calculated
---------	---------	Minimum		Maximum		---------	---------
pH	2	6.5 S.U.		9.5 S.U.		1/Day	Grab
Dissolved Oxygen	2,4	5.0 mg/L		NA		1/Day	Grab
Contact Chlorine (TRC)	1,2	1.0 mg/L		NA		3/Day at 4 Hour Intervals	Grab

NL = No Limitation, monitoring required
NA = Not Applicable
TIRE = Totalizing, Indicating, and Recording Equipment
24 HC = 24-Hour composite sample
4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

Bases for Effluent Limitations

1. Best Professional Judgment (BPJ)
2. Water Quality Standards (9 VAC 25-260)
3. VPDES Permit Regulation (9 VAC 25-31)
4. Regional Stream Model simulation
5. Smith Creek Bacteria and Sediment Watershed TMDL approved June 29, 2004
6. Guidance Memo No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed
7. Annual average concentration limits are based on the Technology Regulation (9 VAC 25-40-70)

Basis for Permit Limits **Outfall 001 - Design Flow: 0.50 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow	3	NL		NL		Continuous	TIRE
$CBOD_5$	2,4	34 mg/L	64 kg/d	68 mg/L	130 kg/d	1/Week	24 HC
TSS	5	44 mg/L	83 kg/d	88 mg/L	167 kg/d	1/Week	24 HC
Oil and Grease	1	27 kg/d		54 kg/d		1/Week	Grab
Effluent Chlorine (TRC)	2	0.064 mg/L		0.14 mg/L		3/Day at 4 Hour Intervals	Grab
E. coli (geometric mean)	2,5	75 N/100 mL		NA		4/Month 10 am to 4 pm	Grab
----------	------	Yearly Average		Maximum		----------	----------
TP – Year to Date	6	NL (mg/L)		NA		1/Month	Calculated
TP – Calendar Year	6,7	1.0 (mg/L)		NA		1/Year	Calculated
TN – Year to Date	6	NL (mg/L)		NA		1/Month	Calculated
TN – Calendar Year	6,7	8.0 (mg/L)		NA		1/Year	Calculated
---------	---------	Minimum		Maximum		---------	---------
pH	2	6.5 S.U.		9.5 S.U.		1/Day	Grab
Dissolved Oxygen	2,4	5.0 mg/L		NA		1/Day	Grab
Contact Chlorine (TRC)	1,2	1.0 mg/L		NA		3/Day at 4 Hour Intervals	Grab

NL = No Limitation, monitoring required NA = Not Applicable
TIRE = Totalizing, Indicating, and Recording Equipment 24 HC = 24-Hour composite sample
4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

Bases for Effluent Limitations
1. Best Professional Judgment (BPJ)
2. Water Quality Standards (9 VAC 25-260)
3. VPDES Permit Regulation (9 VAC 25-31)
4. Regional Stream Model simulation (Appendix D)
5. Smith Creek Bacteria and Sediment Watershed TMDL approved June 29, 2004
6. Guidance Memo No. 07-2008, Amendment No. 2, 10/23/07, Permitting Considerations for Facilities in the Chesapeake Bay Watershed
7. Annual average concentration limits are based on the Technology Regulation (9 VAC 25-40-70)

LIMITING FACTORS – OVERVIEW:
The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (WQMP) (9 VAC 25-720)	
A. TMDL limits	E. coli, TSS
B. Non-TMDL WLAs	None
C. CBP (TN & TP) WLAs	TN, TP
Federal Effluent Guidelines 40 CFR Part 432 – Meat and Poultry Products, Subpart K (Poultry First Processing) and Subpart L (Poultry Further Processing)	TSS, BOD_5, pH, Ammonia-N, Oil and Grease, TN, Fecal Coliform
BPJ/Agency Guidance limits	None
Water Quality-based Limits - numeric	TRC (effluent), E. coli, pH, $CBOD_5$, Ammonia-N, DO, TKN
Water Quality-based Limits - narrative	None
Technology-based Limits (9 VAC 25-40-70)	TN, TP
Chesapeake Bay TMDL	None
Whole Effluent Toxicity (WET)	See Appendix C
Storm Water Limits	None

EVALUATION OF THE EFFLUENT – FEDERAL EFFLUENT GUIDELINES
The following effluent limitations guidelines were considered in the development of this permit:

40 CFR Part 432 – Meat and Poultry Products Point Source Category
- Subpart K – Poultry First Processing
- Subpart L – Poultry Further Processing

Subpart K applies to poultry processing facilities with a Live Weight Kill (LWK) greater than 100 million pounds per year. According to the 2013 permit application, the LWK production for New Market Poultry was 74,695,694 pounds per year. Because the LWK for New Market Poultry is below the 100,000,000 million pounds per year threshold, Subpart K is not applicable.

Subpart L applies if greater than 7 million pounds per year of further processing is conducted at the facility. New Market Poultry has a salvage line where deboned breast meat is generated. According to the 2013 permit application, this operation generates less than 7 million pounds per year. Because the further processing operation at New Market Poultry is below the 7 million pound per year threshold, Subpart L is not applicable.

EVALUATION OF THE EFFLUENT – DISINFECTION
New Market Poultry was assigned an E. coli WLA of 5.22×10^{11} cfu/year in the Smith Creek TMDL. Based on the facility's design flow of 0.30 MGD, the E. coli WLA corresponds to a concentration limit of 126 cfu/100 mL. The E. coli limits for the 0.45 and 0.50 MGD flow tiers were adjusted accordingly to maintain the WLA. Values were expressed in the permit by rounding down to two significant figures in order to meet the WLA and meet agency guidance on significant figures.

In order to ensure adequate disinfection, limits and monitoring 4/Month are required for E coli regardless of the design flow or disinfection method used at the facility.

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS

Because of new effluent temperature data and receiving stream flow and temperature data, the facility was remodeled using the Regional Stream Model. The modeling information is included in the regional office DO model files. The values below were demonstrated to maintain the DO WQS in Smith Creek.

	0.30 MGD	0.45 MGD	0.50 MGD
$CBOD_5$ (mg/L)	79	51	46
TKN (mg/L)	25	25	25
DO (mg/L)	0	5.0	5.0

The Regional Stream Model assumes the $CBODu/CBOD_5$ ratio to be 2.5. The previous fact sheet documented that the $CBODu/CBOD_5$ ratio for the New Market Poultry discharge has been demonstrated to be 3.4; therefore, the $CBOD_5$ value obtained from the model was multiplied by a factor of (2.5/3.4) to calculate the monthly average concentration limit. Concentration limits are imposed based on current guidance.

0.30 MGD Flow Tier: The $CBOD_5$ value obtained from the model was multiplied by the factor of (2.5/3.4) to calculate the monthly average as follows:

(79 mg/L)(2.5/3.4) = 58 mg/L

The daily maximum $CBOD_5$ limit was calculated using a "scale up" factor of 2 as follows:

(58 mg/L)(2) = 116 mg/L (rounds to 120 mg/L)

The loading limits were calculated using the following conversion:

Monthly Average: (58 mg/L)(0.30 MGD)(3.785) = 65.85 kg/d (rounds to 66 kg/d)
Daily Maximum: (116 mg/L)(0.30 MGD)(3.785) = 131.7 kg/d (rounds to 130 kg/d)

The less stringent $CBOD_5$ limits comply with the antibacksliding provisions of the VPDES Permit Regulation because new receiving stream flow and temperature data are available which would have justified the less stringent limits when the previous limits were established.

0.45 MGD Flow Tier: The $CBOD_5$ value obtained from the model was multiplied by the factor of (2.5/3.4) to calculate the monthly average as follows:

(51 mg/L)(2.5/3.4) = 37.5 mg/L (rounds to 38 mg/L)

The daily maximum $CBOD_5$ limit was calculated using a "scale up" factor of 2.
The loading limits were calculated using the following conversion:

Monthly Average: (38 mg/L)(0.45 MGD)(3.785) = 64.7 kg/d (rounds to 65 kg/d)
Daily Maximum: (76 mg/L)(0.45 MGD)(3.785) = 129.4 kg/d (rounds to 130 kg/d)

0.50 MGD Flow Tier: The $CBOD_5$ value obtained from the model was multiplied by the factor of (2.5/3.4) to calculate the monthly average as follows:

(46 mg/L)(2.5/3.4) = 33.8 mg/L (rounds to 34 mg/L)

The daily maximum $CBOD_5$ limit was calculated using a "scale up" factor of 2.
The loading limits were calculated using the following conversion:

Monthly Average: (34 mg/L)(0.50 MGD)(3.785) = 64.3 kg/d (rounds to 64 kg/d)
Daily Maximum: (68 mg/L)(0.50 MGD)(3.785) = 128.7 kg/d (rounds to 130 kg/d)

Based on the model, it was determined that no TKN limits were needed at any of the design flow tiers because based on monitoring data provided by the permittee, the treatment plant is not expected to discharge effluent with TKN concentrations greater than 25 mg/L.

New Market Poultry was assigned a TSS WLA of 134,382.8 lbs/yr in the Smith Creek TMDL which is based on the daily maximum permit limit of 147 mg/L and design flow of 0.30 MGD. This annual allocation was converted to a daily maximum loading and concentration as shown below:

(134,382.8 lbs/yr)(1 yr/365 days)(1 kg/2.2 lb) = 167.35 kg/d
(167.35 kg/d)/((0.30 MGD)(3.785) = 147.38 mg/L

The monthly average TSS limits were calculated using a "scale down" factor of 2.
Using the load allocations, concentration values for each flow tier were calculated as shown below:

	TSS Monthly Average (mg/L)	TSS Monthly Average (kg/d)	TSS Daily Maximum (mg/L)	TSS Daily Maximum (kg/d)
0.30 MGD	73.69	83.68	147.38	167.35
0.45 MGD	49.12	83.68	98.25	167.35
0.50 MGD	44.21	83.68	88.43	167.35

The above values were rounded down in order to meet the TMDL WLA and meet agency guidance on rounding. The daily maximum concentration value for the 0.30 MGD flow tier and the daily maximum loading values for all the flow tiers were not expressed to two significant figures in order to ensure compliance with the TMDL WLA. The limits imposed in the permit are shown below:

	TSS Monthly Average (mg/L)	TSS Monthly Average (kg/d)	TSS Daily Maximum (mg/L)	TSS Daily Maximum (kg/d)
0.30 MGD	73	83	147	167
0.45 MGD	49	83	98	167
0.50 MGD	44	83	88	167

The monitoring frequency for TSS was carried forward from the previous permit based on BPJ.

The Oil and Grease limits were originally based on proposed poultry effluent guidelines and were carried forward in previous permits based on BPJ. The limits were also carried forward at this reissuance based on BPJ.

The pH limits reflect the current WQS for pH in the receiving stream and have been imposed at all flow tiers.

EVALUATION OF THE EFFLUENT – NUTRIENTS

In accordance with § 62.1-44.19:14.C.5. of the Code of Virginia, this discharger has submitted a Registration Statement and DEQ has recognized that they are covered under the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9 VAC 25-820-10 *et seq.*). Coverage under the General Permit will expire December 31, 2016.

Permitted design capacities (PDC) for TN and TP were calculated in the previous fact sheet and are summarized below:

TN PDC = (0.3 MGD)(21.14 mg/L)(8.3438)(365) = 19,313 lbs/yr
TP PDC = (0.3 MGD)(1.77 mg/L)(8.3438)(365) = 1,618 lbs/yr

Annual average concentration limits for TN and TP will be required for the 0.45 MGD and 0.50 MGD flow tiers per the requirements of 9VAC25-40-70.A.3.b.

Based on the annual average concentration limits there will be no net increase in nutrient loads discharged at the expansion flow tiers; therefore, no offset plan is required.

EVALUATION OF THE EFFLUENT – TOXICS:

Stream: A Flow Frequency Determination for the receiving stream is included in Appendix B. The closest upstream ambient monitoring station on Smith Creek is located 10.79 miles upstream of the New Market Poultry discharge (1BSMT023.18). The two closest downstream ambient monitoring stations (1BSMT005.71 and 1BSMT006.62) did not have available pH, temperature and hardness data; therefore, hardness, temperature and pH data were taken from the ambient stream monitoring station at the Route 620 bridge on Smith Creek (1BSMT004.60) located 7.79 river miles downstream of the New Market Poultry discharge.

Stream Information			
90% Annual Temp (°C) =	23.4	90% pH (SU) =	8.5
90% Wet Temp (°C) =	18.4	10% pH (SU) =	7.73
Mean Hardness (mg/L) =	208		

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

Discharge: The pH and temperature values were obtained from data submitted by the permittee. No new hardness data were available so the mean hardness utilized in the previous fact sheet has been carried forward.

Effluent Information			
90% Annual Temp (°C) =	24.8	90% pH (SU) =	7.5
90% Wet Temp (°C) =	21.8	10% pH (SU) =	7.0
Mean Hardness (mg/L) =	278		

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. Current agency guidelines recommends the evaluation of toxic pollutant limits for TRC and Ammonia-N based on default effluent concentrations of 20 mg/L and 9 mg/L, respectively. Because this facility has industrial wastewater and effluent Ammonia-N data are available from the previous fact sheet, actual effluent Ammonia-N data were analyzed rather than using the default effluent concentration of 9 mg/L. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

0.30 MGD Flow Tier:

- TRC: The daily maximum limit is identical to the limit in the previous permit. The monthly average limit is more stringent than the previous permit due to the statistical analysis using 3/Day rather than 1/Day. A review of the monitoring data indicates that no compliance schedule is necessary to meet the more stringent limit.

- Ammonia-N: Based on the nature of the treatment facility and based on past monitoring data, consistent nitrification is expected. The evaluation indicated that no limits were determined to be necessary.

- Additional monitoring data is needed for several pollutants due to the lack of effluent quality data. The permittee must monitor the effluent at Outfall 001 for the substances noted in Attachment A of this permit once after the start of the third year from the permit's effective date.

0.45 and 0.50 MGD Flow Tiers:

- TRC: The daily maximum limits are identical to the limits in the previous permit. The monthly average limits are more stringent than the previous permit due to the statistical analysis using 3/Day rather than 1/Day.

- Additional monitoring data is needed for a number of pollutants due to the lack of effluent quality data. The permittee must monitor the effluent at Outfall 001 for the substances noted in Attachment B of this permit within 1 year following receipt of a statement of Completion of Construction for the 0.45 MGD or 0.50 MGD facility.

WQC-WLA SPREADSHEET INPUT – 0.30 MGD Facility

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: New Market Poultry-Outfall 001
Receiving Stream: Smith Creek
Permit No.: VA0054453
Date: 11/25/2013
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	208	mg/L	1Q10 (Annual) =	3.45	MGD	Annual - 1Q10 Flow =	100	%	Mean Hardness (as CaCO3) =	278	mg/L
90% Temperature (Annual) =	23.4	deg C	7Q10 (Annual) =	3.84	MGD	- 7Q10 Flow =	100	%	90% Temp (Annual) =	24.8	deg C
90% Temperature (Wet season) =		deg C	30Q10 (Annual) =	4.56	MGD	- 30Q10 Flow =	100	%	90% Temp (Wet season) =		deg C
90% Maximum pH =	8.5	SU	1Q10 (Wet season) =		MGD	Wet Season - 1Q10 Flow =		%	90% Maximum pH =	7.5	SU
10% Maximum pH =	7.73	SU	30Q10 (Wet season) =		MGD	- 30Q10 Flow =		%	10% Maximum pH =	7.0	SU
Tier Designation =	1		30Q5 =	5.9	MGD				Current Discharge Flow =	0.30000	MGD
Public Water Supply (PWS) Y/N?	N		Harmonic Mean =	17	MGD				Discharge Flow for Limit Analysis	0.30000	MGD
V(alley) or P(iedmont)? =	V										
Trout Present Y/N? =	N										
Early Life Stages Present Y/N? =	Y										

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 0.30 MGD Facility

Facility Name: New Market Poultry-Outfall 001
Permit No.: VA0054453
Receiving Stream: Smith Creek
Date: 11/25/2013

WATER QUALITY CRITERIA
0.300 MGD Discharge Flow - Mix per "Mixer"

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS
0.300 MGD Discharge - Mix per "Mixer"

Toxic Parameter and Form	Carcinogen?	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health Public Water Supplies	Human Health Other Surface Waters	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health
Ammonia-N (Annual)	N	5.1E+00 mg/L	8.4E-01 mg/L	None	None	6.3E+01 mg/L	1.4E+01 mg/L	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	2.4E-01 mg/L	1.5E-01 mg/L	N/A

WQC-WLA SPREADSHEET INPUT – 0.45 MGD Facility

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: New Market Poultry-Outfall 001
Receiving Stream: Smith Creek
Permit No.: VA0054453
Date: 11/25/2013
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	208	mg/L	1Q10 (Annual) =	3.45	MGD	Annual - 1Q10 Flow =	100	%	Mean Hardness (as CaCO3) =	278	mg/L
90% Temperature (Annual) =	23.4	deg C	7Q10 (Annual) =	3.84	MGD	- 7Q10 Flow =	100	%	90% Temp (Annual) =	24.8	deg C
90% Temperature (Wet season) =		deg C	30Q10 (Annual) =	4.56	MGD	- 30Q10 Flow =	100	%	90% Temp (Wet season) =		deg C
90% Maximum pH =	8.5	SU	1Q10 (Wet season) =		MGD	Wet Season - 1Q10 Flow =		%	90% Maximum pH =	7.5	SU
10% Maximum pH =	7.73	SU	30Q10 (Wet season) =		MGD	- 30Q10 Flow =		%	10% Maximum pH =	7.0	SU
Tier Designation =	1		30Q5 =	5.9	MGD				Current Discharge Flow =	0.30000	MGD
Public Water Supply (PWS) Y/N?	N		Harmonic Mean =	17	MGD				Discharge Flow for Limit Analysis	0.45000	MGD
V(alley) or P(iedmont)? =	V										
Trout Present Y/N? =	N										
Early Life Stages Present Y/N? =	Y										

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 0.45 MGD Facility

Facility Name:	Permit No.:	POST - EXPANSION WATER QUALITY CRITERIA (0.450 MGD Discharge Flow - Mix per "Mixer")				NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS (0.450 MGD Discharge - Mix per "Mixer")		
New Market Poultry-Outfall 001	VA0054453			Human Health				
Receiving Stream:	Date:	Aquatic Protection		Public Water	Other Surface	Aquatic Protection		Human
Smith Creek	4/18/2014	Acute	Chronic	Supplies	Waters	Acute	Chronic	Health
Toxic Parameter and Form / Carcinogen?								
Ammonia-N (Annual) / N		5.8E+00 mg/L	9.4E-01 mg/L	None	None	5.1E+01 mg/L	1.0E+01 mg/L	N/A
Chlorine, Total Residual / N		1.9E-02 mg/L	1.1E-02 mg/L	None	None	1.6E-01 mg/L	1.0E-01 mg/L	N/A

WQC-WLA SPREADSHEET INPUT – 0.50 MGD Facility

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: New Market Poultry-Outfall 001
Receiving Stream: Smith Creek
Permit No.: VA0054453
Date: 11/25/2013
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information			Effluent Information	
Mean Hardness (as CaCO3) =	208 mg/L	1Q10 (Annual) =	3.45 MGD	Annual	- 1Q10 Flow =	100 %	Mean Hardness (as CaCO3) =	278 mg/L
90% Temperature (Annual) =	23.4 deg C	7Q10 (Annual) =	3.84 MGD		- 7Q10 Flow =	100 %	90% Temp (Annual) =	24.8 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	4.56 MGD		- 30Q10 Flow =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	8.5 SU	1Q10 (Wet season) =	MGD	Wet Season	- 1Q10 Flow =	%	90% Maximum pH =	7.5 SU
10% Maximum pH =	7.73 SU	30Q10 (Wet season) =	MGD		- 30Q10 Flow =	%	10% Maximum pH =	7.0 SU
Tier Designation =	1	30Q5 =	5.9 MGD				Current Discharge Flow =	0.30000 MGD
Public Water Supply (PWS) Y/N?	N	Harmonic Mean =	17 MGD				Discharge Flow for Limit Analysis	0.50000 MGD
V(alley) or P(iedmont)? =	V							
Trout Present Y/N? =	N							
Early Life Stages Present Y/N? =	Y							

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – 0.50 MGD Facility

Facility Name:	Permit No.:	POST - EXPANSION WATER QUALITY CRITERIA (0.500 MGD Discharge Flow - Mix per "Mixer")				NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS (0.500 MGD Discharge - Mix per "Mixer")		
New Market Poultry-Outfall 001	VA0054453			Human Health				
Receiving Stream:	Date:	Aquatic Protection		Public Water	Other Surface	Aquatic Protection		Human
Smith Creek	4/18/2014	Acute	Chronic	Supplies	Waters	Acute	Chronic	Health
Toxic Parameter and Form / Carcinogen?								
Ammonia-N (Annual) / N		6.1E+00 mg/L	9.7E-01 mg/L	None	None	4.8E+01 mg/L	9.8E+00 mg/L	N/A
Chlorine, Total Residual / N		1.9E-02 mg/L	1.1E-02 mg/L	None	None	1.5E-01 mg/L	9.5E-02 mg/L	N/A

PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

Since there are no data available for any toxic pollutants immediately upstream of this discharge, all upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is ≤ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.

   B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.

   B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.

C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.

   C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.

   C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.

   C.3. (Exception for Metals data only) If the evaluation indicates that limits are needed, but the data are reported as a form other than "Dissolved" (except for Selenium), then the existing data set is inadequate to make a determination and additional monitoring is required.

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	Previously evaluated, no further monitoring required	---	---
Arsenic, dissolved	7440-38-2	1.0	Previously evaluated, no further monitoring required	---	---
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	Previously evaluated, no further monitoring required	---	---
Chromium III, dissolved	16065-83-1	0.5	Previously evaluated, no further monitoring required	---	---
Chromium VI, dissolved	18540-29-9	0.5	Previously evaluated, no further monitoring required	---	---
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	Previously evaluated, no further monitoring required	---	---
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	Previously evaluated, no further monitoring required	---	---
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	Previously evaluated, no further monitoring required	---	---
Nickel, dissolved	7440-02-0	0.5	Previously evaluated, no further monitoring required	---	---
Selenium, total recoverable	7782-49-2	2.0	Previously evaluated, no further monitoring required	---	---
Silver, dissolved	7440-22-4	0.2	Previously evaluated, no further monitoring required	---	---
Thallium, dissolved	7440-28-0	---	Previously evaluated, no further monitoring required	---	---
Zinc, dissolved	7440-66-6	2.0	Previously evaluated, no further monitoring required	---	---
PESTICIDES/PCBS					
Aldrin [C]	309-00-2	0.05	Previously evaluated, no further monitoring required	---	---
Chlordane [C]	57-74-9	0.2	Previously evaluated, no further monitoring required	---	---
Chlorpyrifos	2921-88-2	(5)	Previously evaluated, no further monitoring required	---	---
DDD [C]	72-54-8	0.1	Previously evaluated, no further monitoring required	---	---
DDE [C]	72-55-9	0.1	Previously evaluated, no further monitoring required	---	---
DDT [C]	50-29-3	0.1	Previously evaluated, no further monitoring required	---	---
Demeton	8065-48-3	---	Previously evaluated, no further monitoring required	---	---
Diazinon	333-41-5	---	**NEW REQUIREMENT. Needs to be sampled.**	---	---
Dieldrin [C]	60-57-1	0.1	Previously evaluated, no further monitoring required	---	---
Alpha-Endosulfan	959-98-8	0.1	Previously evaluated, no further monitoring required	---	---
Beta-Endosulfan	33213-65-9	0.1	Previously evaluated, no further monitoring required	---	---
Alpha-Endosulfan + Beta-Endosulfan		---	Previously evaluated, no further monitoring required	---	---
Endosulfan Sulfate	1031-07-8	0.1	Previously evaluated, no further monitoring required	---	---
Endrin	72-20-8	0.1	Previously evaluated, no further monitoring required	---	---
Endrin Aldehyde	7421-93-4	---	Previously evaluated, no further monitoring required	---	---
Guthion	86-50-0	---	Previously evaluated, no further monitoring required	---	---
Heptachlor [C]	76-44-8	0.05	Previously evaluated, no further monitoring required	---	---
Heptachlor Epoxide [C]	1024-57-3	---	Previously evaluated, no further monitoring required	---	---
Hexachlorocyclohexane Alpha-BHC [C]	319-84-6	---	Previously evaluated, no further monitoring required	---	---
Hexachlorocyclohexane Beta-BHC [C]	319-85-7	---	Previously evaluated, no further monitoring required	---	---
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	Previously evaluated, no further monitoring required	---	---
Kepone	143-50-0	---	Previously evaluated, no further monitoring required	---	---
Malathion	121-75-5	---	Previously evaluated, no further monitoring required	---	---
Methoxychlor	72-43-5	---	Previously evaluated, no further monitoring required	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Mirex	2385-85-5	---	Previously evaluated, no further monitoring required	---	---
Parathion	56-38-2	---	Previously evaluated, no further monitoring required	---	---
PCB Total [C]	1336-36-3	7.0	Previously evaluated, no further monitoring required	---	---
Toxaphene [C]	8001-35-2	5.0	Previously evaluated, no further monitoring required	---	---
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	Previously evaluated, no further monitoring required	---	---
Anthracene	120-12-7	10.0	Previously evaluated, no further monitoring required	---	---
Benzidine [C]	92-87-5	---	Previously evaluated, no further monitoring required	---	---
Benzo (a) anthracene [C]	56-55-3	10.0	Previously evaluated, no further monitoring required	---	---
Benzo (b) fluoranthene [C]	205-99-2	10.0	Previously evaluated, no further monitoring required	---	---
Benzo (k) fluoranthene [C]	207-08-9	10.0	Previously evaluated, no further monitoring required	---	---
Benzo (a) pyrene [C]	50-32-8	10.0	Previously evaluated, no further monitoring required	---	---
Bis 2-Chloroethyl Ether [C]	111-44-4	---	Previously evaluated, no further monitoring required	---	---
Bis 2-Chloroisopropyl Ether	108-60-1	---	Previously evaluated, no further monitoring required	---	---
Bis-2-Ethylhexyl Phthalate [C]	117-81-7	10.0	Previously evaluated, no further monitoring required	---	---
Butyl benzyl phthalate	85-68-7	10.0	Previously evaluated, no further monitoring required	---	---
2-Chloronaphthalene	91-58-7	---	Previously evaluated, no further monitoring required	---	---
Chrysene [C]	218-01-9	10.0	Previously evaluated, no further monitoring required	---	---
Dibenz(a,h)anthracene [C]	53-70-3	20.0	Previously evaluated, no further monitoring required	---	---
1,2-Dichlorobenzene	95-50-1	10.0	Previously evaluated, no further monitoring required	---	---
1,3-Dichlorobenzene	541-73-1	10.0	Previously evaluated, no further monitoring required	---	---
1,4-Dichlorobenzene	106-46-7	10.0	Previously evaluated, no further monitoring required	---	---
3,3-Dichlorobenzidine [C]	91-94-1	---	Previously evaluated, no further monitoring required	---	---
Diethyl phthalate	84-66-2	10.0	Previously evaluated, no further monitoring required	---	---
Dimethyl phthalate	131-11-3	---	Previously evaluated, no further monitoring required	---	---
Di-n-Butyl Phthalate	84-74-2	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dinitrotoluene	121-14-2	10.0	Previously evaluated, no further monitoring required	---	---
1,2-Diphenylhydrazine [C]	122-66-7	---	Previously evaluated, no further monitoring required	---	---
Fluoranthene	206-44-0	10.0	Previously evaluated, no further monitoring required	---	---
Fluorene	86-73-7	10.0	Previously evaluated, no further monitoring required	---	---
Hexachlorobenzene [C]	118-74-1	---	Previously evaluated, no further monitoring required	---	---
Hexachlorobutadiene [C]	87-68-3	---	Previously evaluated, no further monitoring required	---	---
Hexachlorocyclopentadiene	77-47-4	---	Previously evaluated, no further monitoring required	---	---
Hexachloroethane [C]	67-72-1	---	Previously evaluated, no further monitoring required	---	---
Indeno(1,2,3-cd)pyrene [C]	193-39-5	20.0	Previously evaluated, no further monitoring required	---	---
Isophorone [C]	78-59-1	10.0	Previously evaluated, no further monitoring required	---	---
Nitrobenzene	98-95-3	10.0	Previously evaluated, no further monitoring required	---	---
N-Nitrosodimethylamine [C]	62-75-9	---	Previously evaluated, no further monitoring required	---	---
N-Nitrosodi-n-propylamine [C]	621-64-7	---	Previously evaluated, no further monitoring required	---	---
N-Nitrosodiphenylamine [C]	86-30-6	---	Previously evaluated, no further monitoring required	---	---
Pyrene	129-00-0	10.0	Previously evaluated, no further monitoring required	---	---
1,2,4-Trichlorobenzene	120-82-1	10.0	Previously evaluated, no further monitoring required	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
VOLATILES					
Acrolein	107-02-8	---	Previously evaluated, no further monitoring required	---	---
Acrylonitrile [C]	107-13-1	---	Previously evaluated, no further monitoring required	---	---
Benzene [C]	71-43-2	10.0	Previously evaluated, no further monitoring required	---	---
Bromoform [C]	75-25-2	10.0	Previously evaluated, no further monitoring required	---	---
Carbon Tetrachloride [C]	56-23-5	10.0	Previously evaluated, no further monitoring required	---	---
Chlorobenzene	108-90-7	50.0	Previously evaluated, no further monitoring required	---	---
Chlorodibromomethane [C]	124-48-1	10.0	Previously evaluated, no further monitoring required	---	---
Chloroform	67-66-3	10.0	Previously evaluated, no further monitoring required	---	---
Dichlorobromomethane [C]	75-27-4	10.0	Previously evaluated, no further monitoring required	---	---
1,2-Dichloroethane [C]	107-06-2	10.0	Previously evaluated, no further monitoring required	---	---
1,1-Dichloroethylene	75-35-4	10.0	Previously evaluated, no further monitoring required	---	---
1,2-trans-dichloroethylene	156-60-5	---	Previously evaluated, no further monitoring required	---	---
1,2-Dichloropropane [C]	78-87-5	---	Previously evaluated, no further monitoring required	---	---
1,3-Dichloropropene [C]	542-75-6	---	Previously evaluated, no further monitoring required	---	---
Ethylbenzene	100-41-4	10.0	Previously evaluated, no further monitoring required	---	---
Methyl Bromide	74-83-9	---	Previously evaluated, no further monitoring required	---	---
Methylene Chloride [C]	75-09-2	20.0	Previously evaluated, no further monitoring required	---	---
1,1,2,2-Tetrachloroethane [C]	79-34-5	---	Previously evaluated, no further monitoring required	---	---
Tetrachloroethylene	127-18-4	10.0	Previously evaluated, no further monitoring required	---	---
Toluene	10-88-3	10.0	Previously evaluated, no further monitoring required	---	---
1,1,2-Trichloroethane [C]	79-00-5	---	Previously evaluated, no further monitoring required	---	---
Trichloroethylene [C]	79-01-6	10.0	Previously evaluated, no further monitoring required	---	---
Vinyl Chloride [C]	75-01-4	10.0	Previously evaluated, no further monitoring required	---	---
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dichlorophenol	120-83-2	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dimethylphenol	105-67-9	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dinitrophenol	51-28-5	---	Previously evaluated, no further monitoring required	---	---
2-Methyl-4,6-Dinitrophenol	534-52-1	---	Previously evaluated, no further monitoring required	---	---
Nonylphenol	104-40-51	---	**NEW REQUIREMENT. Needs to be sampled.**	---	---
Pentachlorophenol [C]	87-86-5	50.0	Previously evaluated, no further monitoring required	---	---
Phenol	108-95-2	10.0	Previously evaluated, no further monitoring required	---	---
2,4,6-Trichlorophenol [C]	88-06-2	10.0	Previously evaluated, no further monitoring required	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	**0.3, 0.9, 1.1, 6.8, 2.4, 1.4, 15.9, 0.4, 0.2, 1.3, 0.3, 0.3, 0.2, 0.2, 0.3, 0.3, 0.2, 0.3, 18.4, 26.9, 0.4, 0.2, 1, 1, 0.3, 0.4,0.4, 0.4, 0.8, 0.5, 0.4, 0.2, 0.3, 0.2, 0.2, 0.2, 0.4, 0.3, 0.2, 0.2, 0.2, 0.3, 0.2, 0.2, 0.2, 0.2, 0.2, 0.2, 0.3, 0.2, 0.2, 0.4, 0.2, 0.2, 0.3, 0.2, 0.2, 0.2, 0.2, 0.4, 0.3, 0.2, 0.5, 0.2**	**b**	**C.1**
Chloride (mg/L)	16887-00-6	---	Previously evaluated, no further monitoring required	---	---
TRC (mg/L)	7782-50-5	0.1 mg/L	**Default = 20 mg/L**	**a**	**C.2**
Cyanide, Free	57-12-5	10.0	Previously evaluated, no further monitoring required	---	---
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)(ppq)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Sulfide, dissolved	18496-25-8	100	Previously evaluated, no further monitoring required	**---**	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	Previously evaluated, no further monitoring required	---	---
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Hardness (mg/L as $CaCO_3$)	471-34-1	---	278	c	---

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10^{-5}.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:
a = default effluent concentration
b = Effluent Ammonia-N data from previous Fact Sheet
c = DEQ sample

"Data Evaluation" codes:
See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

STAT.EXE RESULTS:

0.30 MGD Design Flow

Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.24
WLAc = 0.15
Q.L. = 0.1
# samples/mo. = 90
# samples/wk. = 21

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.219386217607985
Average Weekly limit = 0.114236766324472
Average Monthly Limit = 0.100880950891653

The data are: 20

0.45 MGD Design Flow

Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.16
WLAc = 0.1
Q.L. = 0.1
# samples/mo. = 90
# samples/wk. = 21

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.146257478405323
Average Weekly limit = 7.61578442163148E-02
Average Monthly Limit = 6.72539672611017E-02

The data are: 20

0.50 MGD Design Flow

Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.15
WLAc = 0.095
Q.L. = 0.1
# samples/mo. = 90
# samples/wk. = 21

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average= 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.138944604485057
Average Weekly limit = 7.23499520054991E-02
Average Monthly Limit = 6.38912688980466E-02

The data are: 20

0.30 MGD Design Flow

Chemical = Ammonia
Chronic averaging period = 30
WLAa = 63
WLAc = 14
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 65
Expected Value = .738836
Variance = 1.33209
C.V. = 1.562134
97th percentile daily values = 3.22320
97th percentile 4 day average = 2.13253
97th percentile 30 day average= 1.13520
< Q.L. = 0
Model used = lognormal

No Limit is required for this material

The data are: 0.3, 0.9, 1.1, 6.8, 2.4, 1.4, 15.9, 0.4, 0.2, 1.3, 0.3, 0.3
0.2, 0.2, 0.3, 0.3, 0.2, 0.3, 18.4, 26.9, 0.4, 0.2, 1, 1, 0.3, 0.4, 0.4, 0.4
0.8, 0.5, 0.4,0.2, 0.3, 0.2, 0.2, 0.2, 0.4, 0.3, 0.2, 0.2, 0.2, 0.3, 0.2,0.2
0.2, 0.2, 0.2, 0.2, 0.2, 0.3, 0.2, 0.2, 0.4, 0.2, 0.2, 0.3, 0.2, 0.2, 0.2, 0.2
0.4, 0.3, 0.2, 0.5, 0.2

WHOLE EFFLUENT TOXICITY (WET) EVALUATION:

Applicability of TMP: The applicability criteria for a facility to perform toxicity testing is contained in the Departments Guidance Memo No. 00-2012, Toxics Management Program Implementation Guidance, 08/24/00, Part IV. The Standard Industrial Code (SIC) for New Market Poultry is 2015, Poultry Processing which is included in Appendix A of the TMP Guidance.

Summary of Toxicity Testing: The previous permit required quarterly chronic testing using *Ceriodaphnia dubia*. Table 1 contains a summary of the toxicity testing results during the term of the permit. These data were evaluated using the procedures outlined in the TMP guidance.

Rationale for Acute Toxicity Testing – 0.30 MGD Design Flow: Table 1 indicates that the 48-hour LC_{50} was 40% in one of the chronic toxicity tests of the current permit term. Therefore, acute toxicity testing will be required in the reissued permit.

Rationale for Most Sensitive Species: The previous fact sheet provided a rationale that the most sensitive species was *Ceriodaphnia dubia*. As a result, chronic toxicity testing for the 0.30 MGD facility includes only 1 species. The permittee must conduct acute and chronic toxicity testing using two species if the facility is expanded to either the 0.45 MGD or 0.50 MGD facility.

Sample Type: A sample type of 24 hour composite is representative of the discharge.

Rationale for WET Limit for 0.30 MGD facility: Less stringent Chronic WET limits were determined to be necessary. (TUc = 17 for *C. dubia* is increased to TUc = 20).This change is due to increased receiving stream flows. The 2009 permit used a 7Q10 flow of 3.8 MGD. The 2014 permit used a 7Q10 flow of 3.84 MGD. The less stringent WET limits comply with the antibacksliding provisions of the VPDES Permit Regulation because new stream flow information is available which would have justified the less stringent limits when the previous limits were established.

Rationale for Monitoring Frequency: Monitoring to determine compliance with the WET limit is quarterly. The facility will be required to perform quarterly monitoring following expansion to either the 0.45 MGD or 0.50 MGD facility. The monitoring shall continue until a total of four quarters is completed. Per the TMP Guidance, both species (*Ceriodaphnia dubia* and *Pimephales promelas*) will be required for both acute and chronic testing. The results from all the quarterly testing will be evaluated to determine if there is a need for any WET limits. If no limits are deemed necessary, and all tests are acceptable, the facility will move to annual monitoring as specified by the permit.

Evaluation of Acute Instream Waste Concentration (IWCa): The Acute IWC is $\leq 33\%$ at all flow tiers (see Tables 2-4). Therefore, the acute toxicity criteria are LC_{50} at all flow tiers.

Calculation of Wasteload Allocations (WLAs) and Dilution Series: The Flow Frequency Determination indicates the 7Q10 and 1Q10 of the receiving stream. WLAs and Dilution Series were generated from the Department's WETLim10.xls spreadsheet by entering the design flow, stream flows, and stream mix percentages for the respective stream flows (See Tables 2-4):

Stat.exe Limit Evaluation: The WLAs are used in the Department's Stat.exe program in order to perform a statistical evaluation of the acute and chronic test results expressed as Toxicity Units (TUs). The toxicity data are analyzed separately by species and test type (acute or chronic). The results of the evaluation are in Table 5.

Peer Reviewer: Dawn Jeffries
Date: 12.19.13, 04.15.14

Table 1
Summary of Chronic Toxicity Testing

Monitoring Period	Test Date	Chronic 3-Brood Static Renewal Survival and Reproduction *Ceriodaphnia dubia*		48-hr LC_{50}
		Survival (TUc)	Reproduction (TUc)	
1st Quarter	9/1/13	1.0	12.50	>100
2nd Quarter	12/1/13	1.0	1.0	>100
3rd Quarter	3/5/14	6.25	12.5	40.0

Table 2
WETLim10.xls Spreadsheet – 0.30 MGD Flow

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97			Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR					
Revision Date: 01/10/05											
File: WETLIM10.xls			ACUTE	2.01835306	TUa	LC_{50} =	50	% Use as	2.00	TUa	
(MIX.EXE required also)											
			ACUTE WLAa	3.75		Note: Inform the permittee that if the mean of the data exceeds					
						this TUa:	1.0	a limit may result using WLA.EXE			
			Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR					
			CHRONIC	20.1835306	TU_c	NOEC =	5	% Use as	20.00	TU_c	
			BOTH*	37.5000009	TU_c	NOEC =	3	% Use as	33.33	TU_c	
Enter data in the cells with blue type:			AML	20.1835306	TU_c	NOEC =	5	% Use as	20.00	TU_c	
Entry Date:	11/19/13		ACUTE WLAa,c	37.5		Note: Inform the permittee that if the mean					
Facility Name:	New Market Poultry		CHRONIC WLAc	13.8		of the data exceeds this TUc:	8.29431435				
VPDES Number:	VA0054453		* Both means acute expressed as chronic			a limit may result using WLA.EXE					
Outfall Number:	001										
			% Flow to be used from MIX.EXE			Difuser /modeling study?					
Plant Flow:	0.3	MGD				Enter Y/N	N				
Acute 1Q10:	3.45	MGD	100	%		Acute	1	:1			
Chronic 7Q10:	3.84	MGD	100	%		Chronic	1	:1			
Are data available to calculate CV? (Y/N)			N	(Minimum of 10 data points, same species, needed)					Go to Page 2		
Are data available to calculate ACR? (Y/N)			N	(NOEC<LC50, do not use greater/less than data)					Go to Page 3		
IWC_a	8	%	Plant flow/plant flow + 1Q10			NOTE: If the IWCa is >33%, specify the					
IWC_c	7.246376812	%	Plant flow/plant flow + 7Q10			NOAEC = 100% test/endpoint for use					
Dilution, acute	12.5		100/IWCa								
Dilution, chronic	13.8		100/IWCc								
WLA_a	3.75		Instream criterion (0.3 TUa) X's Dilution, acute								
WLA_c	13.8		Instream criterion (1.0 TUc) X's Dilution, chronic								
$WLA_{a,c}$	37.5		ACR X's WLA_a - converts acute WLA to chronic units								
ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)								
Constants eA	0.4109447		Default = 0.41								
eB	0.6010373		Default = 0.60								
eC	2.4334175		Default = 2.43								
eD	2.4334175		Default = 2.43 (1 samp)	No. of samples	1	**The Maximum Daily Limit is calculated from the lowest					
						LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.					
$LTA_{a,c}$	15.41042625		WLAa,c X's eA								
LTA_c	8.29431474		WLAc X's eB						Rounded NOEC's		%
MDL** with $LTA_{a,c}$	37.50000092	TU_c	NOEC =	2.666667	(Protects from acute/chronic toxicity)				NOEC =	3	%
MDL** with LTA_c	20.18353064	TU_c	NOEC =	4.954535	(Protects from chronic toxicity)				NOEC =	5	%
AML with lowest LTA	20.18353064	TU_c	NOEC =	4.954535	Lowest LTA X's eD				NOEC =	5	
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a											
									Rounded LC50's		%
MDL with $LTA_{a,c}$	3.750000092	TU_a	LC50 =	26.666666	%				LC50 =	27	%
MDL with LTA_c	2.018353064	TU_a	LC50 =	49.545346	%				LC50 =	50	

CHRONIC DILUTION SERIES TO RECOMMEND

0.30 MGD Flow Tier	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	13	8.294314		
Dilution series to use for limit			5	20.00
Dilution factor to recommend:	0.360555128		0.223606798	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	36.1	2.77	22.4	4.47
	13.0	7.69	5.0	20.00
	4.7	21.33	1.1	89.44
	1.7	59.17	0.3	400.00
Extra dilutions if needed	0.61	164.11	0.06	1788.85
	0.22	455.17	0.01	8000.00

Table 3
WETLim10.xls Spreadsheet – 0.45 MGD Flow

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 01/10/05
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE	**1.3943212**	**TUa**	**LC_{50} =**	**72**	% Use as	**1.38**	**TUa**
ACUTE WLAa	**2.6**		Note: Inform the permittee that if the mean of the data exceeds this TUa:	**1.0**	a limit may result using WLA.EXE		

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	**13.943212**	**TU_c**	**NOEC =**	**8**	% Use as	**12.50**	**TU_c**
BOTH*	**26.0000006**	**TU_c**	**NOEC =**	**4**	% Use as	**25.00**	**TU_c**
AML	**13.943212**	**TU_c**	**NOEC =**	**8**	% Use as	**12.50**	**TU_c**

Enter data in the cells with blue type:

ACUTE WLAa,c	**26**		Note: Inform the permittee that if the mean		
CHRONIC WLAc	**9.53333333**		of the data exceeds this TUc:	**5.72988866**	
* Both means acute expressed as chronic			a limit may result using WLA.EXE		

Entry Date:	11/19/13						
Facility Name:	New Market Poultry						
VPDES Number:	**VA0054453**						
Outfall Number:	**001**						
			% Flow to be used from MIX.EXE		**Difuser /modeling study?**		
Plant Flow:	**0.45**	MGD			Enter Y/N	**N**	
Acute 1Q10:	**3.45**	MGD	**100**	%	Acute	**1**	:1
Chronic 7Q10:	**3.84**	MGD	**100**	%	Chronic	**1**	:1

Are data available to calculate CV? (Y/N)	**N**	(Minimum of 10 data points, same species, needed)	Go to Page 2
Are data available to calculate ACR? (Y/N)	**N**	(NOEC<LC50, do not use greater/less than data)	Go to Page 3

IWC_a	11.53846154	%	Plant flow/plant flow + 1Q10
IWC_c	10.48951049	%	Plant flow/plant flow + 7Q10

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Dilution, acute	8.666666667	100/IWCa
Dilution, chronic	9.533333333	100/IWCc

WLA_a	2.6	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	9.533333333	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	26	ACR X's WLA_a - converts acute WLA to chronic units

ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447	Default = 0.41
eB	0.6010373	Default = 0.60
eC	2.4334175	Default = 2.43
eD	2.4334175	Default = 2.43 (1 samp) No. of samples 1

****The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.**

$LTA_{a,c}$	10.6845622	WLAa,c X's eA						
LTA_c	5.729888927	WLAc X's eB					Rounded NOEC's	%
MDL** with $LTA_{a,c}$	26.00000064	TU_c	NOEC =	3.846154	(Protects from acute/chronic toxicity)		NOEC = 4	%
MDL** with LTA_c	13.94321199	TU_c	NOEC =	7.171949	(Protects from chronic toxicity)		NOEC = 8	%
AML with lowest LTA	13.94321199	TU_c	NOEC =	7.171949	Lowest LTA X's eD		NOEC = 8	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

							Rounded LC50's	%
MDL with $LTA_{a,c}$	2.600000064	TU_a	LC50 =	38.461538	%		LC50 = 39	%
MDL with LTA_c	1.394321199	TU_a	LC50 =	71.719486	%		LC50 = 72	

CHRONIC DILUTION SERIES TO RECOMMEND

0.45 MGD Flow Tier	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	18	5.729889		
Dilution series to use for limit			8	12.50
Dilution factor to recommend:	0.424264069		0.282842712	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	42.4	2.36	28.3	3.54
	18.0	5.56	8.0	12.50
	7.6	13.09	2.3	44.19
	3.2	30.86	0.6	156.25
Extra dilutions if needed	1.37	72.75	0.18	552.43
	0.58	171.47	0.05	1953.13

Table 4
WETLim10.xls Spreadsheet – 0.50 MGD Flow

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97			Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR				
Revision Date: 01/10/05										
File: WETLIM10.xls			ACUTE	1.26951483	TUa	LC_{50} =	79	% Use as	1.26	TUa
(MIX.EXE required also)										
			ACUTE WLAa		2.37	Note: Inform the permittee that if the mean of the data exceeds				
						this TUa:	1.0	a limit may result using WLA.EXE		
			Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR				
			CHRONIC	12.6951483	TU_c	NOEC =	8	% Use as	12.50	TU_c
			BOTH*	23.7000006	TU_c	NOEC =	5	% Use as	20.00	TU_c
Enter data in the cells with blue type:			AML	12.6951483	TU_c	NOEC =	8	% Use as	12.50	TU_c
Entry Date:	11/19/13		ACUTE WLAa,c		23.7	Note: Inform the permittee that if the mean				
Facility Name:	New Market Poultry		CHRONIC WLAc		8.68	of the data exceeds this TUc:			5.21700352	
VPDES Number:	VA0054453		* Both means acute expressed as chronic			a limit may result using WLA.EXE				
Outfall Number:	001									
			% Flow to be used from MIX.EXE			Difuser /modeling study?				
Plant Flow:	0.5	MGD				Enter Y/N	N			
Acute 1Q10:	3.45	MGD	100	%		Acute	1	:1		
Chronic 7Q10:	3.84	MGD	100	%		Chronic	1	:1		
Are data available to calculate CV? (Y/N)			N	(Minimum of 10 data points, same species, needed)					Go to Page 2	
Are data available to calculate ACR? (Y/N)			N	(NOEC<LC50, do not use greater/less than data)					Go to Page 3	
IWC_a	12.65822785	%	Plant flow/plant flow + 1Q10			NOTE: If the IWCa is >33%, specify the				
IWC_c	11.52073733	%	Plant flow/plant flow + 7Q10			NOAEC = 100% test/endpoint for use				
Dilution, acute	7.9		100/IWCa							
Dilution, chronic	8.68		100/IWCc							
WLA_a	2.37		Instream criterion (0.3 TUa) X's Dilution, acute							
WLA_c	8.68		Instream criterion (1.0 TUc) X's Dilution, chronic							
$WLA_{a,c}$	23.7		ACR X's WLA_a - converts acute WLA to chronic units							
ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)							
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)							
Constants eA	0.4109447		Default = 0.41							
eB	0.6010373		Default = 0.60							
eC	2.4334175		Default = 2.43							
eD	2.4334175		Default = 2.43 (1 samp)	No. of samples	1	**The Maximum Daily Limit is calculated from the lowest				
						LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.				
$LTA_{a,c}$	9.73938939		WLAa,c X's eA							
LTA_c	5.217003764		WLAc X's eB						Rounded NOEC's	%
MDL** with $LTA_{a,c}$	23.70000058	TU_c	NOEC =	4.219409		(Protects from acute/chronic toxicity)			NOEC =	5 %
MDL** with LTA_c	12.69514826	TU_c	NOEC =	7.877025		(Protects from chronic toxicity)			NOEC =	8 %
AML with lowest LTA	12.69514826	TU_c	NOEC =	7.877025		Lowest LTA X's eD			NOEC =	8
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a										
									Rounded LC50's	%
MDL with $LTA_{a,c}$	2.370000058	TU_a	LC50 =	42.194092	%				LC50 =	43 %
MDL with LTA_c	1.269514826	TU_a	LC50 =	78.770250	%				LC50 =	79

CHRONIC DILUTION SERIES TO RECOMMEND

0.50 MGD Flow Tier	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	20	5.217004		
Dilution series to use for limit			8	12.50
Dilution factor to recommend:	0.447213595		0.282842712	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	44.7	2.24	28.3	3.54
	20.0	5.00	8.0	12.50
	8.9	11.18	2.3	44.19
	4.0	25.00	0.6	156.25
Extra dilutions if needed	1.79	55.90	0.18	552.43
	0.80	125.00	0.05	1953.13

Table 5 – Stat. exe Results

Facility = New Market Poultry 0.30 MGD Chemical = WET Chronic, C. dubia Chronic averaging period = 4 WLA $_{a,c}$ = 37.5 WLAc = 13.8 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 3 Expected Value = 8.66666 Variance = 27.04 C.V. = 0.6 97th percentile daily values = 21.0896 97th percentile 4 day average = 14.4195 97th percentile 30 day average= 10.4524 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 20.1835320199346 Average Weekly Limit = 20.1835320199346 Average Monthly Limit = 20.1835320199346 The data are: 12.5, 1, 12.5	Facility = New Market Poultry Chemical = TUc - Midpoint Check 0.45 MGD Chronic averaging period = 4 WLA $_{a,c}$ = 26 WLAc = 9.53 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5.56 Variance = 11.1288 C.V. = 0.6 97th percentile daily values = 13.5298 97th percentile 4 day average = 9.25067 97th percentile 30 day average= 6.70565 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5.56
Facility = New Market Poultry Chemical = TUc - Midpoint Check 0.50 MGD Chronic averaging period = 4 WLA $_{a,c}$ = 23.7 WLAc = 8.68 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5	

GROUNDWATER MONITORING

There are currently two anaerobic lagoons at New Market Poultry. The old anaerobic lagoon was not lined, so a Groundwater Monitoring Plan (GWMP) was required in the permit. A new anaerobic lagoon was brought online in June 2007 which contained a synthetic liner. Since 2007, the permittee has been using the new anaerobic lagoon and the old anaerobic lagoon has not been used.

In August 2013, the synthetic liner in the new anaerobic lagoon developed a bubble and came to the surface. The new anaerobic lagoon has a clay liner underneath so there were no immediate impacts to groundwater. In a letter dated February 11, 2014, DEQ concurred with the plan for improvements to both anaerobic lagoons as presented by Scott Sheridan, P.E., Geosyntec Consultants. The timeframe for improvements is to repair the new pond as is possible while the old pond is repaired and made operational again. Once the old pond is operational, the new pond will be repaired.

The permittee currently monitors TKN, Ammonia-N, Nitrate, pH, Temperature, TOC and Nitrite at eight wells (MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-8 and MW-9). Guidance in what is required in the revised GWMP follows. The permit contains a special condition that the revised GWMP be submitted 120 days from the effective date of the permit.

GROUNDWATER MONITORING PLANS

A groundwater monitoring plan shall describe the monitoring well network with related activities to ensure that the wells are able to collect representative groundwater samples and consist of a step-by-step written description of the procedures used for well purging, well sampling, handling samples in the field, transporting samples to the laboratory, and laboratory quality control. The Groundwater Monitoring Plan shall describe the following, at a minimum:

1. **Site Location**
   A site map showing all well locations should be provided. Appropriate scale and north arrow should also be provided on the map as well any surface water features, access roads, application fields, buildings, or other site-related structures.

2. **Aquifer Description**
   The plan should identify the geologic units and lithology that is encountered by the groundwater monitoring wells. Copies of any geologic maps or reports that present this information may be provided. Groundwater contour maps or potentiometric maps showing existing groundwater elevation data are encouraged to determine groundwater flow rate and direction at the site.

3. **Monitoring Well Network**
   Copies of the boring logs and well completion reports for each well used at the site should be included within the plan. These logs are usually provided by the drilling company who drills and installs the well materials. Included within this discussion should be which well(s) would be considered upgradient. Upgradient well classification is critical when evaluating the groundwater data to determine whether detections can be related to site activities or attributable to off-site impact or background concentrations.

4. **Monitoring Well installation & Construction**
   a) Drilling Methods
      The plan should describe the drilling method, equipment decontamination procedures and any soil or rock sampling techniques that may be applied. The description of any drilling methods should adhere to appropriate industry standards.

   b) Well Materials
      The plan must describe the casing and screen type, screen length (typically 5 to 10 feet), filter pack material, grouting procedure and the surface completion (i.e., concrete pad, etc.) and protective measures (i.e., barriers, pylons, etc.) that will be used for the wells at the site. Well construction materials should be inert and must allow the well to operate throughout the required monitoring timeframe and allow the collection of representative groundwater samples.

c) Well Development
The goal of well development is to remove drilling fluid, fines and sediment from the wellbore and the filter pack to ensure that representative groundwater samples can be collected. The plan must describe the methods used to restore the natural hydraulic conductivity of the formation after well construction is complete. To be effective, the method used for well development should involve reversals or surges in flow to flush the well.

d) Well Survey
The methods used during the horizontal and vertical surveying of well positions should be described. Wells should be surveyed with an accuracy of 0.01 feet with a reference point established somewhere on the well casing. The GMP must note whether the well surveying was conducted by a licensed or otherwise certified land surveyor.

5. Well Abandonment
The plan should describe the procedures for abandoning any groundwater monitoring well that will be removed from the monitoring network. The procedures should adhere to appropriate industry standards and any regulatory requirements.

6. Well Maintenance
The plan should describe well maintenance procedures, and should include actions the facility will take to maintain the wells, i.e., mowing grass, concrete pylons around well, protection from surface water infiltration and flooding, etc., and also include what data will be used to evaluate when wells may need replacement or repairs (i.e., repeatedly dry, damage to well casing, excessive sediment when purging or sampling, etc.).

7. Sampling and Analysis
a) Hydrologic Measurements
The sampling plan should include provisions for the measurement of static water elevations in each well immediately prior to purging and sampling. The accuracy of this measurement should be no less than 0.01 foot. The device to be used for water level measurements, as well as the procedure for measuring water levels, should be described. All equipment used to collect static water levels should be constructed of inert materials and must be decontaminated prior to use at another well. The decontamination procedures must be described within the plan.

b) Well Purging prior to Sampling
Because the water standing in a well prior to sampling may not represent in-situ ground-water quality, stagnant water should be purged from the well and filter pack prior to sampling. The plan should describe the procedures for purging wells, to include the type of equipment to be used, volume and disposition of purge water, and the parameters that will be monitoring during purging. Frequently monitoring indicator parameters, such as turbidity, dissolved oxygen, conductivity and temperature, during well purging to ensure that these parameters are stabilized within at least 10% over the last two measurements, provides greater assurance that representative groundwater samples can be collected. The equipment used to collect the field parameters should be described, as well as equipment calibration and decontamination procedures.

c) Sample Collection
The sampling plan should describe the type of sampling equipment (bailers, bladder pumps, pneumatic pumps, etc.) , the number of samples to be collected, the sampling order, the parameters to be sampled, and sample handling. The depth of the each well should be measured each time the well is sampled. It is recommended that upgradient wells be sampled prior to downgradient wells to reduce the possibility of cross-contamination.

1) The order in which samples are to be collected and containerized should be described, which is dictated by the volatilization sensitivity of the parameters. Parameters such as pH and conductivity (specific conductance) should be collected first. The preferred collection order for some common ground water parameters is listed below:
    a. Volatile organics (VOA)
    b. Purgeable organic carbon (POC)
    c. Purgeable organic halogens (PDX)
    d. Total organic halogens (TOX)

e. Total organic carbon (TOC)
f. Extractable organics
g. Total metals
h. Phenols
i. Cyanide
j. Sulfate and chloride
k. Turbidity
l. Nitrate and ammonia

2) Sample Preservation
The plan should identify the type of sample containers, as well as the procedures that the owner/operator will use to ensure that sample containers are free of contaminants prior to use, and the preservation techniques that will be used to collect samples, and should be consistent with 40 CFR 136 and/or SW-846. Methods of sample preservation are intended to 1) retard biological action, 2) retard chemical reactions such as hydrolysis or oxidation, and 3) reduce sorption effects. Preservation methods include pH control, chemical addition, refrigeration (cooler temperature to 4^0 C), and protection from light.

3) Field Sampling Quality Control
The sampling plan should ensure the reliability and validity of data collected as part of a groundwater monitoring program. This may be accomplished by providing for the collection and analysis of trip blanks and equipment blanks. As a minimum, trip blanks should be collected and analyzed for volatile organics. One trip blank per sampling event is recommended. Equipment blanks should be taken if the purging and/or sampling equipment is not dedicated. A minimum of one equipment blank is recommended for each day that the ground water monitoring wells are sampled.

4) Sample Storage and Transportation
To ensure that the sample is not held beyond the recommended holding time and to establish the documentation necessary to trace sample possession from time of collection, an adequate chain of custody record should be included in the protocol and maintained with the data for each sampling event. The chain of custody record should contain the following information:
a. Sample number
b. Signature of collector
c. Date and time of collection
d. Sample type
e. Identification of well
f. Number of containers
g. Parameters requested for analysis
h. Signature of person involved in the chain of possession
i. Inclusive dates of possession
j. Internal temperature of shipping container when samples were placed in it
k. Internal temperature of shipping container upon opening in the laboratory

d) Sample Analysis and Laboratory Quality Control
Samples should be delivered to the laboratory and comply with the sample holding times within the required timeframes 40 CFR 136 and/or SW-846. The plan should note the laboratory quality controls to be used (i.e., method blanks, matrix spikes, etc.). With the laboratory accreditation program established in the Commonwealth, laboratory accreditation shall be required before any environmental analyses performed by a commercial environmental laboratory is used for the purposes of the Virginia Air Pollution Control Law, the Virginia Waste Management Act or the State Water Control Law (§ 10.1-1300 et seq., § 10.1-1400 et seq., and § 62.1-44.2 et seq., respectively, of the Code of Virginia). The plan should note that samples were sent to and analyzed by an VELAP-certified laboratory.

8. Additional Considerations

a) Verification Sampling

When spikes occur in the concentrations of sampled parameters during a sampling event, the facility may consider re-sampling the well(s) for that parameter(s) as part of a verification sampling process. The verification process includes another groundwater sample taken with 30 days of the initial sampling event to either confirm or refute the elevated concentration prior to making a decision on an exceedance. The same process for sample collection, handling and transportation should be used for a verification sample. In particular, the laboratory detection and reporting limits should be the same between the sampling event and the verification event.

b) Low-Flow Purging and Sampling Techniques

To ensure that the groundwater samples are accurately reflecting groundwater conditions at the site, well purging and sampling techniques can be adjusted to reduce the disturbance of the water column within the well. To minimize any disturbance, low flow purging and sampling can be performed. This requires purging and sampling the well at 0.2 to 0.3 L/min and periodically monitoring for indicator parameters, such as turbidity, dissolved oxygen, conductivity and temperature, to ensure that these parameters are stabilized within at least 10% over the last two measurements. Turbidity is the amount of particulate matter that is suspended in water and can influence the TDS results. Discussion on purging and sampling techniques can be found at http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/sitechar/gwmonitr/rcra_gw.pdf and http://www.solinst.com/Res/papers/407EPA.html.

Questions or comments regarding the contents of this document should be addressed to the regional waste groundwater specialist by phone at (540) 574-7910 or by e-mail at laura.stuart@deq.virginia.gov.

APPENDIX D

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page
- Content and format as prescribed by the VPDES Permit Manual.
- Added receiving stream for Outfall 001 and 002.

Part I.A.1. **Effluent Limitations and Monitoring Requirements – Outfall 001 – 0.30 MGD Facility:** Bases for effluent limits and monitoring requirements provided in previous pages of this fact shee**t.**
Updates Part I.A.1. of the previous permit with the following:
- The effluent TRC sampling frequency increased from 1/Day Grab to 3/Day at 4-Hour intervals per Agency Guidance.
- The monthly average TRC limit became more stringent.
- The E. coli monitoring frequency increased from 2/Month to 4/Month per Agency Guidance.
- The Whole Effluent Toxicity monitoring frequency changed from 1/Quarter to 1/3 Months.
- The WET limit changed from TUc = 17 to TUc = 20.
- BOD_5 limits were replaced with $CBOD_5$ limits.

Part I.A.2. **Effluent Limitations and Monitoring Requirements – Outfall 001 – 0.45 MGD Facility:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual.
Updates Part I.A.2. of the previous permit with the following:
- The effluent TRC sampling frequency increased from 1/Day Grab to 3/Day at 4-Hour intervals per Agency Guidance.
- Monitoring for TP, TN, Nitrate plus Nitrite and TKN and associated footnotes were deleted.
- The monthly average TRC limit became more stringent.
- The E. coli monitoring frequency increased from 2/Month to 4/Month per Agency Guidance.

Part I.A.3. **Effluent Limitations and Monitoring Requirements – Outfall 001 – 0.50 MGD Facility:** Bases for effluent limits provided in previous pages of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual.
Updates Part I.A.3. of the previous permit with the following:
- The effluent TRC sampling frequency increased from 1/Day Grab to 3/Day at 4-Hour intervals per Agency Guidance.
- Monitoring for TP, TN, Nitrate plus Nitrite and TKN and associated footnotes were deleted.
- The Monthly Average TRC limit became more stringent.
- The E. coli monitoring frequency increased from 2/Month to 4/Month per Agency Guidance.

Part I.B. **Additional TRC Limitations and Monitoring Requirements:** *Updates Part I.B. of the previous permit.*

Part I.C. **Effluent Limitations and Monitoring Requirements – Additional Instructions:** *Updates Part I.C. of the previous permit.* The QL for BOD_5/$CBOD_5$ changed from 5 mg/L to 2 mg/L. Authorized by VPDES Permit Regulation, 9 VAC 25-31-190.J.4 and 220.I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

Part I.D. **Groundwater Monitoring Plan:** *Updates Part I.E.11. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. Groundwater monitoring for parameters of concern will indicate whether possible lagoon seepage is resulting in violations to the State Water Control Board's Groundwater Standards.

Part I.E. **Whole Effluent Toxicity (WET) Requirements:** *Updates Part I.D. of the previous permit.* VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

Part I.F.1. **95% Capacity Reopener:** *Updates Part I.E.1. of the previous permit.* Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for certain permits. Included for this facility to ensure that adequate treatment capacity will continue to be provided as influent flows and/or loadings increase

Part I.F.2. **Materials Handling/Storage:** *Identical to Part I.E.2. of the previous permit.* 9 VAC 25-31-280.B.2. requires that the types and quantities of "wastes, fluids, or pollutants which are … treated, stored, etc." be addressed for all permitted facilities.

Part I.F.3. **O&M Manual Requirement:** *Updates Part I.E.3. of the previous permit.* Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs and included for this facility per BPJ.

Part I.F.4. **Concept Engineering Report (CER) Requirement**: *Updates Part I.E.5. of the previous permit.* 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.

Part I.F.5. **Licensed Operator Requirement**: *Identical to Part I.E.6. of the previous permit*.The VPDES Permit Regulation 9 VAC 25-31-200 C, the Code of Virginia 54.1-2300 et seq., and Rules and Regulations for Waterworks and Wastewater Works Operators 18 VAC 160-20-10 et seq., require licensure of operators. The licensed operator requirements apply to wastewater treatment works based on the maximum 30-day

Part I.F.6. **Water Quality Criteria Monitoring:** *Updates Part I.E.7. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A and Attachment B of this VPDES permit.

Part I.F.7. **Reopeners:**

a. *Identical to Part I.E.8.a. of the previous permit:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

b. *Identical to Part I.E.8.b. of the previous permit:* 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

c. *Identical to Part I.E.8.c. of the previous permit*: 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Part I.F.8. **Suspension of concentration limits for E3/E4 facilities:** *Identical to Part I.E.10. of the previous permit.* 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

Part I.F.9. **Notification Levels:** *Identical to Part I.E.9. of the previous permit.* Required by the VPDES Permit Regulation 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

Part I.G.1. **General Storm Water Special Conditions:** *Updates Part I.F. of the previous permit***.** VPDES Permit Regulation 9 VAC 25-31-10 defines discharges of storm water from industrial activity in 9 industrial categories. 9 VAC 25-31-120 requires a permit for these discharges.

Part I.G.2. **Storm Water Pollution Prevention Plan:** *Updates Part I.G. of the previous permit***.** The Storm Water Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.

Part I.G.3. **Sector Specific Storm Water Pollution Prevention Plan Requirements:** *Updates Part I.H. of the previous permit***.** The sector-specific requirements are derived from the VPDES general permit for discharges under Sector U – Food and Kindred Products.

Attachment A **Attachment A:** *Updates Attachment A of the previous permit for the 0.30 MGD facility***.**

Attachment B **Attachment B:** *Updates Attachment B of the previous permit for the 0.45 MGD and 0.50 MGD design flow tiers.*

Part II **Conditions Applicable to All VPDES Permits:** *Updates Part II of previous permit.* VPDES Permit Regulation 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed. Part II.A.4. language added for Virginia Environmental Laboratory Accreditation Program (VELAP) per 1 VAC 30, Chapter 45: Certification for Noncommercial Environmental Laboratories, and 1 VAC 30, Chapter 46: Accreditation for Commercial Laboratories.

DELETIONS

Tabulated below are the sections of the previous permit that were deleted and the basis for this action.

Part I.E.4. Sludge Management Plan (SMP) Requirement – There are specific SMP requirements for sanitary discharges. New Market Poultry sends all sanitary wastewater to the Town of New Market collection system. The management of industrial sludge/solids is addressed in the O&M Manual Special Condition.

Part I.A.4. Outfall 002 was deleted from the permit.